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ABSTRACT

This publication provides a basic list of mathematical standards for the State of Louisiana, and indicates at which point each skill should be introduced and mastered in grades 1 through 10. At designated mastery points, students will be expected to respond satisfactorily to criterion-referenced test items designed to assess performance on the identified skill. The list was predicated on the National Council of Supervisors of Mathematics position statement on essential mathematical skills. However, it currently includes only eight of the ten skill areas, excluding probability and computer literacy. Skills are grouped by sets; numeration; whole number operations; fractions and operations; decimals and decimal operation; percent, ratio, and proportion; squares and square root; relations and functions; measurement and estimation; geometry; and problem solving. (MNS)

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LOUISIANA
MINIMUM STANDARDS FOR MATHEMATICS
GRADES 1–12

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LOUISIANA MINIMUM STANDARDS

FOR MATHEMATICS, GRADES 1-12
1978

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SUPERINTENDENT'S MESSAGE

Accountability is a way of saying to Louisiana students and their parents that we care about what happens in our schools, that we care whether or not children learn. Accountability says that learning is not a mysterious process but a natural process of living.

Though all children learn, each learns at his/her own rate. Each is capable of contributing to Louisiana and our Nation. When a child makes no contribution, our schools have received a bad report card.

Accountability defines what children should know and when they should know it. It is concerned with how these things are taught and it assesses our level of success in the teaching process. Accountability is a tool to be used or misused. This guide is the Department's way of defining its usefulness and is a step toward the goal of this administration.

E A C H C H I L D - - W E L L T A U G H T

PREFACE

This publication provides a basic list of mathematical standards for the State of Louisiana, and indicates at which point each skill should be introduced and mastered. At designated mastery points, students will be expected to respond satisfactorily to criterion-referenced test items designed to assess performance on the identified skill.

This list was predicated upon the National Council of Supervisors of Mathematics position statement of Basic Skill Areas. This statement has been endorsed by the Association of State Supervisors of Mathematics and the National Council of Teachers of Mathematics. The current list includes skills from eight of the ten recognized basic skill areas. The two areas omitted are probability and computer literacy. Members of the Mathematics Advisory Council felt that measurement in these two areas would be difficult.

The skill areas are grouped as follows: Sets; Numeration; Whole Number Operations; Fractions and Operations; Decimals and Decimal Operation; Percent, Ratio and Proportion; Squares and Square Root; Relations and Functions; Measurement and Estimation; Geometry; and Problem-Solving.

A word of caution is in order. The State Mathematics Advisory Council on Minimum Standards presents this list as "minimums" and abhors the idea that it could be considered comprehensive or that it represents a viable program in mathematics for all students. It is to be considered "the core", for it is these skills that will be tested statewide at specified checkpoints, and must be tested systemwide annually by 1980-81.

The organization of this publication is as follows: the skills are listed at the left of the page and the grades are listed in columns at the top of the page. The introduction of a skill is indicated by a single asterisk in the desired grade column. Two asterisks indicate the skill is continued in that grade and when three asterisks occur, this indicates the point of mastery. In some instances, skills are to be introduced and mastered in the same year; this is indicated by three asterisks as the only entry for that skill. <u>It is essential that all teachers of mathematics understand that skills mastered at any level must be maintained in the succeeding years.</u>

The Mathematics Advisory Council realized that in grades 9 through 12, individual student programs vary. Although two mathematics credits are required for graduation, they may be scheduled at any grade 9 through 12. Therefore, the skills listed for grade 9 and grade 10 indicate those that are considered minimums for one and two high school credits respectively. It will also be noted that some skills are listed as introduced and ongoing, but mastery is never indicated. The Council felt that students should be given exposure to these skills but mastery of them should not be considered a "minimum."

INTRODUCTION

The minimum skills list for mathematics for the State of Louisiana has been prepared by teachers based upon their knowledge and experience of teaching mathematics to Louisiana children. Therefore, the skills contained in this listing are considered to be realistic and attainable by the less able student in the Louisiana School System.

The list of skills does not necessarily pattern the scope and sequence of any commercial textbook list. The list represents a composite of the thinking of Louisiana educators as to skills a student should be able to perform and at what grade level he should be able to perform them. Consensus of the Mathematics Advisory Council indicates these skills are included in all approved mathematics textbooks presently on the state-adopted list.

An individual teacher, using these standards, should check those skills specified to be introduced, continued, and mastered at his teaching level. The teacher should then survey the particular text that he is using and determine that the specified skills are contained therein. It is suggested that the sequence of the basic text be followed. Should a skill appear on the minimum list that is not covered by the basal text, the teacher must provide the supplemental material needed to meet his responsibility of teaching that skill to his class. The teacher must also consider his responsibility to the student to provide adequate practice to maintain previously mastered skills.

This publication is the base from which all systemwide and statewide tests should be constructed. The Louisiana Accountability Law (Act 621) specifies that statewide testing in mathematics will occur annually beginning in 1978 on skills mastered by third, seventh, and tenth grade students. Test items should be structured to measure performance on skills designated in this publication.

The mastery of the skills in this list will provide an adequate mathematical foundation for the majority of our youth. The responsibility for the attainment and retention of these skills rests with each facet of the educational community. Anything less than total commitment on the part of each person involved is unacceptable.

In the decade ahead, it will be necessary to revise and update this listing. The Mathematics Advisory Council is hopeful that the revision and updating will also necessitate an upgrading. Let us make it happen!

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* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

SKILL: I. SETS	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
ALL SKILLS MASTERED AT A GRADE LEVEL SHOULD BE MAINTAINED AT EACH HIGHER LEVEL											
1. Recognize a set of concrete objects from a given description. (ex.: boys in a classroom, girls in a classroom)	***										
2. Identify members (elements) of a set.	***										
3. Identify the empty set.	*	**	***								
4. Compare the number of members (elements) in two sets indicating which is more or less. (set of 5 members or less)	***										
5. Identify equivalent and non-equivalent sets.	*	***									
6. Match concrete and semi-concrete objects in a one-to-one correspondence. (sets with 5 or less members)	*	***									

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

SETS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
7. Recognize related and non-related objects in a collection.	*	**	***								
8. Recognize the cardinal number of a set of not more than ten members. (elements)	***										
9. Write the cardinal number of a set of not more than ten members. (elements)	*	***									
10. Order sets of pictures as designated. (sets of not more than 10 members or elements)	*	**	***								
11. Compare and construct sets. (one more, one less; limit to sets with 10 or less members or elements)		*	***								
12. Match a numeral with the number of members (elements) of a set. (sets of 10 or less members)	*	***									

MATHEMATICS

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

SKILL: II. NUMERATION	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
ALL SKILLS MASTERED AT A GRADE LEVEL SHOULD BE MAINTAINED AT EACH HIGHER LEVEL											
1. Count concrete objects. (1 - 10)	***										
2. Count semi-concrete objects. (1 - 10)	***										
3. Count to ten by ones.	***										
4. Recognize numbers in sequential order. (1 - 10)	***										
5. Recognize numbers in random order. (1 - 10)	*	***									
6. Write numbers in sequential order. (1 - 10)	*	***									
7. Identify number words. (0 - 10)		***									
8. Group concrete and semi-concrete objects in tens. (limit to 10 groups)		*	***								

MATHEMATICS

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

NUMERATION continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
9. Identify number words for multiples of ten. (20 - 90)			*	***							
10. Count to one hundred by tens.		*	***								
11. Identify number words eleven through nineteen.			*	***							
12. Count to one hundred by ones.		*	***								
13. Count to one hundred by fives.		*	***								
14. Count to one hundred by twos.		*	***								
15. Write to one hundred by tens.		*	***								
16. Write to one hundred by ones.		*	***								
17. Write to one hundred by fives.		*	***								
18. Write to one hundred by twos.		*	**	***							

MATHEMATICS

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

NUMERATION continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
19. Read and write numbers through one thousand.			*	***							
20. Read and write numbers through ten thousand.				*	***						
21. Read and write number words through one thousand.					*	**	***				
22. Read and write numbers through one hundred thousand.					*	***					
23. Read and write numbers through one million.						*	***				
24. Recognize place values, ones and tens.		*	***								
25. Recognize place value, hundreds.			*	***							
26. Recognize place value, thousands.				*	***						
27. Recognize place value, hundred-thousands.					*	***					
28. Recognize place value of decimal numbers through thousandths.						*	**	***			

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

NUMERATION continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
29. Recognize place value, millions.						*	***				
30. Read and write number words through ten-thousands.					*	**	**	**	**	**	**
31. Read and write number words through hundred-thousands.						*	**	**	**	**	**
32. Read and write number words through millions.							*	**	**	**	**
33. Read and write Roman numerals. (1 - 39)						*	**	**	**	**	**
34. Round numbers to nearest ten.					*	**	***				
35. Round numbers to nearest one hundred.						*	**	***			
36. Round numbers to nearest one thousand.						*	**	**	***		
37. Round numbers to any specified place value through one million.							*	**	**	***	

MATHEMATICS

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

NUMERATION continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
38. Identify and use ordinal numbers through fifth.	*	***									
39. Identify ordinal numbers through tenth.		***									
40. Use ordinal numbers through tenth.		*	***								
41. Use ordinal numbers through nineteenth.			*	***							
42. Use ordinal numbers through ninety-ninth.				*	***						
43. Supply missing numbers in a sequence through ten.	*	***									
44. Supply missing numbers in a sequence through one hundred.		*	**	***							
45. Write the number that comes before (after) a given number. (1 - 99)		*	**	***							
46. Supply missing numbers in a sequence through one thousand.				*	***						

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

NUMERATION continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
47. Supply missing numbers in a sequence through ten thousand.				*	***						
48. Supply missing numbers in a sequence through one hundred thousand.					*	***					
49. Supply missing numbers in a sequence through one million.						*	***				
50. Define and identify the set of integers.								*	**	***	
51. Illustrate integers as points on a number line.								*	**	***	
52. Determine the absolute value of a given integer.								*	**	***	

* Introduced
** Ongoing
*** Mastery

MATHEMATICS

MINIMUM STANDARDS

SKILL: III. WHOLE NUMBER OPERATIONS	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
ALL SKILLS MASTERED AT A GRADE LEVEL SHOULD BE MAINTAINED AT EACH HIGHER LEVEL											
1. Add basic facts (sums 0 - 12) using concrete objects.		***									
2. Add basic facts. (sums 0 - 10)		***									
3. Add basic facts. (sums 0 - 18)		*	***								
4. Add three one-digit numbers. (sums 0 - 9)		*	***								
5. Add four one-digit numbers.			*	***							
6. Add a two-digit number and a one-digit number. (no regrouping)		*	***								
7. Compute sums to ninety-nine with zero as one of the two addends.		*	**	***							
8. Add two two-digit numbers. (no regrouping)		*	***								

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

WHOLE NUMBER OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
9. Add columns of two-digit numbers. (no regrouping)			*	***							
10. Add a three-digit number and a one-digit number. (no regrouping)			*	***							
11. Add a three-digit number and a two-digit number. (no regrouping)			*	***							
12. Add a three-digit number and a three-digit number. (no regrouping)			*	***							
13. Add a two-digit number and a one-digit number, regrouping in ones place only.			*	***							
14. Add a two-digit number and a two-digit number, regrouping in ones place only.			*	***							
15. Add a three-digit number and a one-digit number, regrouping in ones place only.			*	***							
16. Add a three-digit number and a two-digit number, regrouping in ones place only.			*	***							

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

WHOLE NUMBER OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
17. Add two three-digit numbers, regrouping in ones place only.			*	***							
18. Add three two-digit numbers, regrouping in ones place only.			*	***							
19. Add two two-digit numbers regrouping in tens place only.				*	***						
20. Add a three-digit number and a two-digit number, regrouping in tens place only.				*	***						
21. Add two three-digit numbers, regrouping in tens place only.				*	***						
22. Add a three-digit number and a two-digit number. (regrouping)				*	***						
23. Add two three-digit numbers. (regrouping)					*	***					
24. Add three three-digit numbers. (regrouping)					*	***					

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

WHOLE NUMBER OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
25. Add two four-digit numbers. (regrouping)					*	***					
26. Add two five-digit numbers. (regrouping)					*	***					
27. Add columns of numbers with five or less digits, five or less addends.							*	***			
28. Estimate a sum to the appropriate place value.						*	**	**	**	***	
29. Identify the parts of an addition problem.		*	**	***							
30. Demonstrate a knowledge of subtraction facts with minuends to ten.		*	***								
31. Subtract a one-digit number from a two-digit number (minuends to 18) using concrete objects.		*	**	***							
32. Subtract a one-digit number from a two-digit number (minuends to 18) using basic facts.		*	**	***							

MATHEMATICS

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

WHOLE NUMBER OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
33. Compute differences to ninety-nine with zero in the subtrahend.		*	**	***							
34. Subtract a one-digit number from a two-digit number (no regrouping)		*	***								
35. Subtract a two-digit number from a two-digit number. (no regrouping)		*	***								
36. Subtract a one-digit number from a three-digit number. (no regrouping)			***								
37. Subtract a two-digit number from a three-digit number. (no regrouping)			***								
38. Subtract a three-digit number from a three-digit number. (no regrouping)			***								

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

WHOLE NUMBER OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
NOTE: THE FOLLOWING SKILLS (39 - 49) SHOULD INCLUDE EXAMPLES WITH ZEROS IN THE MINUEND											
39. Subtract a one-digit number from a two-digit number. (no regrouping)			*	***							
40. Subtract a one-digit number from a two-digit number. (regrouping)			*	***							
41. Subtract a two-digit number from a two-digit number. (regrouping)			*	***							
42. Subtract a one-digit number from a three-digit number. (regrouping ones)				*	**	***					
43. Subtract a one-digit number from a three-digit number. (regrouping)				*	**	***					
44. Subtract a two-digit number from a three-digit number. (regrouping)				*	**	***					
45. Subtract a three-digit number from a three-digit number. (regrouping ones)				*	**	***					

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

WHOLE NUMBER OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
46. Subtract a three-digit number from a three-digit number. (regrouping)				*	**	***					
47. Subtract a one-digit number from a four-digit number. (regrouping)				*	**	***					
48. Subtract a two-digit number from a four-digit number. (regrouping)				*	**	***					
49. Subtract a three-digit number from a four-digit number. (regrouping)				*	**	***					
50. Subtract one number from another. (minuends limited to 5 digits)						*	**	***			
51. Check subtraction by addition.			*	**	***						
52. Identify the parts of a subtraction problem.			*	***							
53. Multiply two one-digit numbers. (products through 36)				***							

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

WHOLE NUMBER OPERATIONS continued	GRADES										
	Readiness	1	2	3	4	5	6	7	8	9	10
54. Multiply two one-digit numbers. (products through 81)				*	***						
55. Multiply a two- or three-digit number by a one-digit number. (no regrouping)				*	***						
56. Multiply a two-digit number by a one-digit number. (no digit greater than 6)				*	***						
57. Multiply a two-digit number by a one-digit number.					*	***					
58. Multiply by ten; one hundred; one thousand.						*	***	**			
59. Multiply by ten thousand; one hundred thousand; one million.							*	**	***		
60. Write powers of ten in exponential form.							*	**	**	***	
61. Multiply a three-digit number by a one-digit number.					*	***					
62. Multiply a two-digit number by a two-digit number.						*	***				

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

WHOLE NUMBER OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
63. Multiply a three-digit number by a two-digit number.						*	***				
64. Multiply a three-digit number by a three-digit number.						*	**	***			
65. Multiply a four-digit number by any number of four digits or less.							*	**	***		
66. Identify the parts of a multiplication problem. (include factors and products)				*	***						
67. Demonstrate a knowledge of division facts. (divisors of 6 or less)				*	***						
68. Demonstrate a knowledge of division facts.					*	***					

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** Ongoing
*** Mastery

MINIMUM STANDARDS

WHOLE NUMBER OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
NOTE: THE FOLLOWING SKILLS (70 - 86) SHOULD INCLUDE EXAMPLES WITH ZEROS IN THE QUOTIENT.											
70. Divide a one-digit number by a one-digit number. (with remainder)					*	***					
71. Divide a two-digit number by a one-digit number. (no remainder)					*	***					
72. Divide a three-digit number by a one-digit number. (no remainder)					*	***					
73. Divide a two-digit number by a one-digit number. (with remainder)					*	***					
74. Divide a four-digit number by a one-digit number. (no remainder)					*	***					
75. Divide a three-digit number by a one-digit number. (with remainder)					*	***					
76. Divide a four-digit number by a one-digit number. (with remainder)					*	***					

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** Ongoing
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MINIMUM STANDARDS

WHOLE NUMBER OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
77. Divide by a multiple of ten.						*	***				
78. Divide a two-digit number by a two-digit number. (no remainder)						*	***				
79. Divide a three-digit number by a two-digit number. (no remainder)						*	**	***			
80. Divide a four-digit number by a two-digit number. (no remainder)						*	**	***			
81. Divide a two-digit number by a two-digit number. (with remainder)						*	**	***			
82. Divide a three-digit number by a two-digit number. (with remainder)						*	**	***			
83. Divide a four-digit number by a two-digit number. (with remainder)						*	**	***			
84. Divide a five-digit number by a two-digit number. (with remainder)						*	**	***			

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** Ongoing
*** Mastery

MINIMUM STANDARDS

WHOLE NUMBER OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
85. Divide by multiples of one hundred.							*	**	**	***	
86. Divide a number of more than three digits by a three-digit number.							*	**	**	***	
87. Check division by multiplication.					*	**	**	**	**	***	
88. Identify the parts of a division problem.				*	**	***					
89. Estimate products and/or quotients.								*	**	**	**
90. Express remainders as fractions.						*	***				
91. Add and subtract integers.								*	**	***	
92. Multiply and divide integers.									*	**	***

MATHEMATICS

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MINIMUM STANDARDS

SKILL: IV. FRACTIONS AND OPERATIONS	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
ALL SKILLS MASTERED AT A GRADE LEVEL SHOULD BE MAINTAINED AT EACH HIGHER LEVEL											
1. Recognize one-half of a concrete object.	***										
2. Recognize one-third and one-fourth of a concrete object.		*	***								
3. Identify the fractions one-half, one-third and one-fourth.		*	***								
4. Read and write the symbol for the fractional part of a region. (limit: 1/2, 1/3, 1/4)			*	***							
5. Shade in fractional part (1/2, 1/3, 1/4) of a given figure.			*	***							
6. Identify the fractional part (1/5, 1/6) of a whole.				*	***						
7. Identify the fractional part (1/8, 1/10) of a whole.					*	***					

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

FRACTIONS AND OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
8. Identify the common fraction that represents the shaded area of a gridded figure when compared to total area. (2/5, 3/5, 3/8, 5/8, 7/8)						*	**	***			
9. Identify the parts of a fraction.				*	***						
10. Add two simple fractions with like denominators. (no regrouping)					*	***					
11. Subtract two simple fractions with like denominators. (no regrouping)					*	***					
12. Identify: proper fraction, improper fraction and mixed numbers.					*	**	**	**	**	***	
13. Add mixed numbers with like denominators. (no regrouping, no renaming in the sum)					*	***					
14. Subtract mixed numbers with like denominators. (no regrouping, no renaming in difference)					*	***					

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

FRACTIONS AND OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
15. Continue consecutive equivalency pattern of fractions. (ex.: 1/2, 2/4, 3/6, 4/8, ...)						*	***				
16. Determine the greatest common factor of numbers.						*	**	***			
17. Rename fractions in simplest terms.						*	**	***			
18. Rename fractions in higher terms.						*	**	***			
19. Rename mixed numbers and/or whole numbers as improper fractions.						*	**	***			
20. Rename improper fraction as a mixed number and/or whole number.						*	**	***			
21. Add fractions with like denominators. (renaming sums)						*	**	***			
22. Subtract fractions with like denominators. (renaming difference)						*	**	***			

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

FRACTIONS AND OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
23. Multiply two proper fractions.						*	**	***			
24. Multiply a whole number by a proper fraction.						*	**	***			
25. Multiply a mixed number by a proper fraction.						*	**	**	***		
26. Multiply a whole number by a mixed number.						*	**	**	***		
27. Multiply two mixed numbers.						*	**	**	***		
28. Identify the multiplicative inverse.						*	**	***			
29. Divide a proper fraction by a proper fraction.						*	**	***			
30. Divide a whole number by a proper fraction.						*	**	***			
31. Divide a proper fraction by a whole number.						*	**	***			
32. Divide a mixed number by a proper fraction.						*	**	**	***		

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** Ongoing
*** Mastery

MINIMUM STANDARDS

FRACTIONS AND OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
33. Divide a proper fraction by a mixed number.						*	**	**	***		
34. Divide a mixed number by a mixed number.						*	**	**	***		
35. Determine the least common multiple (LCM) of two or more numbers.						*	**	***			
36. Rename fractions with unlike denominators to fractions with common denominators.						*	**	***			
37. Add fractions with unlike denominators.						*	**	***			
38. Subtract fractions with unlike denominators.						*	**	***			
39. Add mixed numbers with unlike denominators.						*	**	***			
40. Subtract a fraction from a whole number.						*	**	***			
41. Subtract mixed numbers with like denominators. (regrouping)						*	**	**	***		

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** Ongoing
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MINIMUM STANDARDS

FRACTIONS AND OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
42. Subtract mixed numbers with unlike denominators. (no regrouping)						*	**	***			
43. Subtract mixed numbers with unlike denominators. (regrouping)						*	**	**	***		

MATHEMATICS

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** Ongoing
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MINIMUM STANDARDS

SKILL: V. DECIMALS AND DECIMAL OPERATIONS	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
ALL SKILLS MASTERED AT A GRADE LEVEL SHOULD BE MAINTAINED AT EACH HIGHER LEVEL											
NOTE: USE HORIZONTAL AND VERTICAL FORMS TO WRITE PROBLEMS.											
1. Read and write decimals through hundredths.					*	***					
2. Add and subtract decimals through hundredths.					*	***					
3. Read and write decimals through thousandths.						*	***				
4. Add decimals through thousandths.						*	***				
5. Subtract decimals through thousandths.						*	***				
6. Multiply a whole number (limit: 3 digits) by a decimal (limit: thousandths).						*	**	***			

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

DECIMALS AND DECIMAL OPERATIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
7. Round decimals to tenths; hundredths, thousandths.							*	***			
8. Multiply a decimal by a decimal. (limit: thousandths)							*	***			
9. Divide decimals. (limit: 5-digit dividends, 3-digit divisors)							*	**	**	***	
10. Identify decimals equivalent to: 1/2, 1/4, 3/4, 1/5 - 4/5, 1/10 - 9/10, 1/100 - 99/100.					*	***					
11. Identify decimals equivalent to: 1/3, 2/3, 1/6 - 5/6, 1/8 - 7/8.						*	***				
12. Change a common fraction to an equivalent decimal fraction.							*	**	***		
13. Change a decimal fraction to an equivalent common fraction.								*	***		

MATHEMATICS

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** Ongoing
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MINIMUM STANDARDS

SKILL: VI. PERCENT, RATIO, PROPORTION	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
ALL SKILLS MASTERED AT A GRADE LEVEL SHOULD BE MAINTAINED AT EACH HIGHER LEVEL											
1. Identify the percent sign.					*	***					
2. Define percent.						*	**	**	**	**	**
3. Change a decimal to a percent.						*	**	***			
4. Change a percent to a decimal.						*	**	***			
5. Change common fractions with denominators of two, three, four, five, eight, ten, twenty, twenty-five, fifty and one hundred to percents.						*	**	***			
6. Find the percent of a given number.						*	**	***			
7. Change a mixed number to a percent.							*	**	***		
8. Change a percent to a mixed number.							*	**	***		

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

PERCENT; RATIO; PROPORTION continued	GRADES										
	Readiness	1	2	3	4	5	6	7	8	9	10
9. Find what percent one number is of another.							*	**	***		
10. Find a number when a percent of it is known.							*	**	***		
11. Find the percent of increase.								*	**	**	***
12. Find the percent of decrease.								*	**	**	***
13. Use the formula (I = PRT) to compute Simple Interest.								*	**	**	***
14. Express a ratio of two numbers. (Include the comparison of a shaded area of a given figure to the total area)						*	**	**	**	**	***
15. Identify the parts (terms) of a proportion and solve for the missing term(s).						*	**	**	**	**	***

MATHEMATICS

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MINIMUM STANDARDS

SKILL: . VII. SQUARES AND SQUARE ROOT	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
ALL SKILLS MASTERED AT A GRADE LEVEL SHOULD BE MAINTAINED AT EACH HIGHER LEVEL											
1. Find the square of a one- or two-digit number.							*	**	***		
2. Identify square roots of numbers that are perfect squares (limit: 1 - 100).								*	**	***	
3. Use a table to find the square root of a number.								*	**	***	

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** Ongoing
*** Mastery

MINIMUM STANDARDS

SKILL: VIII. RELATIONS AND FUNCTIONS	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
ALL SKILLS MASTERED AT A GRADE LEVEL SHOULD BE MAINTAINED AT EACH HIGHER LEVEL											
1. Identify a position with reference to a given location. (Over-under, left-right)	*	**	***								
2. Compare the position of objects with reference to a given location. (nearer-farther)	*	**	***								
3. Identify and use the symbols +, =, − .		*	***								
4. Recognize the symbol for greater than (>) and less than (<).		*	**	**	***						
5. Apply the following mathematical symbols correctly. (>, <, =, +, −, x, ÷, ≠)				*	***						
6. Recognize zero as the numerical equivalent of the empty set.		*	**	***							

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MINIMUM STANDARDS

RELATIONS AND FUNCTIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
7. Use zero as the identity element in addition.		*	**	***							
8. Compare the numbers, zero to ninety-nine, using "greater than, less than."		*	**	***							
9. Use one as the identity element in multiplication.				*	***						
10. Given groups of numbers and specified operations, determine the equality relation between them. (>, =, <)					*	**	***				
11. Interpret data presented in pictorial form.				*	***						
12. Interpret simple data from a simple bar graph.					*	**	***				
13. Construct a bar graph from given data.						*	**	**	**	***	
14. Interpret data from simple line graphs, pictographs, or circle graphs.							*	***			
15. Use information from a line graph.								*	**	***	

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** Ongoing
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MINIMUM STANDARDS

RELATIONS AND FUNCTIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
16. Construct an appropriate graph (pictograph, line graph, circle graph) from given data.								*	**	**	***
17. Collect data and construct a bar or line graph.									*	**	**
18. Supply the missing numbers in a sequence of odd or even numbers. (0 - 50)		*	**	***							
19. Supply the missing numbers in a sequence of odd or even numbers. (51 - 99)			*	***							
20. Supply the missing numbers in a sequence of odd and even numbers. (100 - 1,000)				*	***						
21. Supply the missing numbers in a sequence of numbers that are multiples of five or ten. (limit: 100)				*	***						
22. Recognize numbers that are divisible by five.				*	**	***					
23. Recognize that division by zero is not possible.					*	***					

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** Ongoing
*** Mastery

MINIMUM STANDARDS

RELATIONS AND FUNCTIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
24. Supply the missing number in a whole number sequence which requires either addition or subtraction.								*	**	**	***
25. Supply the missing number in a whole number sequence which requires multiplication and/or division.								*	**	**	***
26. Order fractions with one-digit denominators. (limit: 4 fractions)							*	**	**	***	
27. Order fractions with two-digit denominators. (limit: 4 fractions)								*	**	**	***
28. Order decimals. (limit: hundredths)					*	**	***				
29. Order decimals. (limit: thousandths)						*	**	**	***		
30. Order decimals.								*	**	***	
31. Identify Prime Numbers less than one hundred.						*	**	***			

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** Ongoing
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MINIMUM STANDARDS

RELATIONS AND FUNCTIONS continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
32. Solve a simple linear equation of one unknown whose root is a whole number. (two-step solution)								*	**	***	
33. Rename numbers given in exponential form such as 5^2, 6^3, 3^4, 10^5.								*	**	***	
34. Rename numbers using scientific notation.										*	**

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MINIMUM STANDARDS

SKILL: IX. MEASUREMENT AND ESTIMATION	GRADES										
	Readiness	1	2	3	4	5	6	7	8	9	10
ALL SKILLS MASTERED AT A GRADE LEVEL SHOULD BE MAINTAINED AT EACH HIGHER LEVEL											
1. Relate concepts of time to events. (morning, noon, night)	*	**	***								
2. Name the days of the week and months of the year.	*	**	***								
3. Use the calendar to determine the day of the week, the month, and the year of a given date.		*	**	***							
4. Identify the following coins: cent, nickel, dime, and quarter.	***										
5. Recognize the monetary value of cent, nickel, dime, and quarter.		*	**	***							
6. Identify the ¢ symbol.			***								

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** Ongoing
*** Mastery

MINIMUM STANDARDS

MEASUREMENT AND ESTIMATION continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
7. Associate the ¢ symbol with the value of cent, nickel, dime, and quarter.			***								
8. Write the value of money using the $ and the . (decimal point); e.g., $2.00.				*	***						
9. Count change. (limit: $1.00)				*	***						
10. Identify the smaller or larger object. (limit: two objects)	***										
11. Identify objects that are the same or that are different.	***										
12. Identify shorter or longer line segments. (limit: two)	*	***									
13. Identify lighter or heavier objects. (concrete)	*	***									
14. Identify the hour and minute hand on the clock.		*	***								

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** Ongoing
*** Mastery

MINIMUM STANDARDS

MEASUREMENT AND ESTIMATION continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
15. Tell time on the hour.		*	***								
16. Tell time on the half hour.		*	**	***							
17. Tell time to the nearest five minute interval.				*	**	***					
18. Tell time to the nearest minute.				*	**	**	***				
19. Record time. (limit: to hour and half hour; use colon notation, e.g., 12:30)			*	***							
20. Identify the centimeter and meter as units of metric (SI) linear measure.			*	***							
21. Measure lengths using centimeters.			*	***							
22. Measure lengths using the meter.			*	**	***						
23. Measure volume in liters.			*	**	***						

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** Ongoing
*** Mastery

MINIMUM STANDARDS

MEASUREMENT AND ESTIMATION continued	GRADES										
	Readiness	1	2	3	4	5	6	7	8	9	10
24. Measure a weight (mass) in grams and kilograms.				*	**	***					
25. Identify the inch and the foot as units of customary linear measure.		*	***								
26. Measure lengths to the nearest inch.			*	***							
27. Measure length to nearest half inch, foot, yard.				*	***						
28. Recognize the cup, pint, and the quart as units of customary liquid measure.		*	**	***							
29. Measure liquid to the nearest cup, pint, quart, half gallon and gallon.				***							
30. Measure weight in pounds.				***							
31. Measure weight in ounces.				*	***						
32. Read a thermometer - Celsius and/or Fahrenheit.				*	**	**	***				

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MINIMUM STANDARDS

MEASUREMENT AND ESTIMATION continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
33. Determine the appropriate unit to measure length in metric (SI) and customary systems.					*	**	**	**	**	***	
34. Determine the appropriate unit to measure capacity (liquids) in metric (SI) and customary systems.					*	**	**	**	**	***	
35. Determine the appropriate unit to measure weight (mass) in the metric (SI) and the customary systems.						*	**	**	**	***	
36. Convert linear measures: Metric (SI) - Centimeters to meters, meters to centimeters						*	**	**	**	***	
Customary - Inches to feet to yards; yards to feet to inches						*	**	**	**	***	
NOTE: NO CONVERSION BETWEEN UNITS OF THE METRIC (SI) SYSTEM AND UNITS OF THE CUSTOMARY SYSTEM IS DESIRED											

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MINIMUM STANDARDS

MEASUREMENT AND ESTIMATION continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
37. Convert square measures:											
Metric (SI) -cm^2 to m^2 ; m^2 to cm^2						*	**	**	**	**	***
Customary - sq. in. to sq. ft. to sq. yds.; sq. yds. to sq. ft. to sq. in.						*	**	**	**	**	***
* See note following skill 36.											
38. Convert capacity (liquid) measures:											
Metric (SI) - milliliters to liters; liters to milliliters						*	**	**	**	**	***
Customary- cups to pints to quarts to gallons; gallons to quarts to pints to cups						*	**	**	**	**	***
* See note following skill 36.											
39. Convert weight (mass) measures:											
Metric (SI) - milligrams to grams to kilograms; kilograms to grams to milligrams							*	**	**	**	***
Customary- ounces to pounds; pounds to ounces							*	**	**	**	***
* See note following skill 36.											

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*** Mastery

MINIMUM STANDARDS

MEASUREMENT AND ESTIMATION continued	GRADES										
	Readiness	1	2	3	4	5	6	7	8	9	10
40. Measure a length to nearest one-quarter and/or one-eighth of an inch.							*	***			
41. Add or subtract measurements of length, weight, or capacity using the customary system.											
Length - inches, feet, yards								*	**	**	***
Weight - ounces, pounds								*	**	**	***
Capacity - cups, pints, quarts								*	**	**	***
42. Add or subtract measurements of length, weight (mass) or capacity using the metric (SI) system.											
Length - meters, centimeters								*	**	**	***
Weight(mass) - kilograms, grams								*	**	**	***
Capacity - liters, milliliters								*	**	**	***
43. Compute the answers to problems involving money.					*	**	**	**	***		
44. Recognize and use ratios in map reading.								*	**	***	

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** Ongoing
*** Mastery

MINIMUM STANDARDS

MEASUREMENT AND ESTIMATION continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
45. Recognize and use π in fraction (22/7) or decimal (3.14) form.						*	**	***			
46. Measure angles using a protractor. (less than 180^{0})						*	**	***			
47. Compute sums and differences in time problems involving hours and minutes.							*	**	***		

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MINIMUM STANDARDS

SKILL: X. GEOMETRY	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
ALL SKILLS MASTERED AT A GRADE LEVEL SHOULD BE MAINTAINED AT EACH HIGHER LEVEL.											
* METRIC (SI) AND CUSTOMARY UNITS SHOULD BOTH BE USED.											
1. Identify a circle, triangle, square and rectangle.	*	***									
2. Classify objects or pictures according to color and shape.	*	***									
3. Associate the words circle, triangle, square, and rectangle with their visual representation.		*	**	***							
4. Draw a facsimile of these two-dimensional geometric figures: circle, triangle, square, rectangle.			*	***							
5. Identify and draw representations of points, lines, segments, and rays.				*	***						

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MINIMUM STANDARDS

GEOMETRY continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
6. Identify perimeter and determine by counting the units along each of the sides of a two dimensional figure.					***						
7. Compute the perimeter of a square, rectangle, and triangle.					*	***					
8. Identify the area of a square and a rectangle by counting square units enclosed.					***						
9. Compute the area of a square and a rectangle using the appropriate formula.						*	***				
10. Identify the parts of a circle. (center, radius, diameter, circumference, semi-circle)					*	***					
11. Identify pairs of intersecting and parallel lines.					*	**	***				
12. Identify an angle, the parts of an angle and a right angle.					*	**	***				

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MINIMUM STANDARDS

GEOMETRY continued	GRADES										
	Readiness	1	2	3	4	5	6	7	8	9	10
13. Identify types of quadrilaterals. (trapezoids, parallelograms, rhombus)						*	**	**	***		
14. Identify common spatial figures. (cube, pyramid, sphere, rectangular prism, cone, cylinder)						*	**	**	***		
15. Identify horizontal and vertical lines.						*	***				
16. Identify perpendicular lines.						*	**	***			
17. Classify angles. (acute, obtuse, right, straight)						*	**	**	***		
18. Classify triangles according to sides. (scalene, isosceles, equilateral)								*	**	***	
19. Compute the perimeter of triangles. (scalene, isosceles, equilateral)								*	**	**	***
20. Compute the perimeters of quadrilaterals. (parallelogram, rhombus, trapezoid)								*	**	**	***

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

GEOMETRY continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
21. Compute the volume of a cube and a rectangular prism.						*	**	**	**	**	***
22. Identify the altitude and base of a triangle and a parallelogram.							*	***			
23. Classify triangles according to their angles.								*	**	***	
24. Identify the parts of a right triangle.								*	**	***	
25. Compute the area of a triangle.								*	**	***	
26. Compute the area of a parallelogram.								*	**	***	
27. Compute the circumference of a circle using the formula $C = 2\pi r$.								*	**	***	
28. Compute the area of a circle using the formula $A = \pi r^2$.								*	**	***	
29. Recognize congruent figures.							*	***			

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

GEOMETRY continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
30. Recognize similar figures.								*	***		
31. Identify these parts of a circle. (chord, arc)									*	**	**
32. Identify regular polygons of ten or less sides.									*	**	**
33. Identify the following basic geometric constructions. (bisector of line segment, bisector of an angle, perpendicular lines, congruent figures)								*	**	**	***
34. Use the Pythogorean Rule.									*	**	**

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

SKILL	GRADES										
XI. PROBLEM-SOLVING	Readiness	1	2	3	4	5	6	7	8	9	10
ALL SKILLS MASTERED AT A GRADE LEVEL SHOULD BE MAINTAINED AT EACH HIGHER LEVEL AND EXTENDED AS APPROPRIATE AT EACH HIGHER LEVEL											
1. Combine the members (elements) of a set of concrete objects. (sums of 5 members or elements)	*	***									
2. Combine the members (elements) of a set of semi-concrete objects. (sums of 5 members or elements)	*	***									
3. Add members to make a set to contain a specified number of members. (limit to 5 members)	*	***									
4. Repeat a pattern from a given sequence.	*	***									
5. Solve word problems, using addition or subtraction. (limit: sums through 10, minuends of 10)		***									
6. Choose the addition or subtraction sentence to solve a word problem. (limit: sums of 10, minuends of 10)		*	**	***							

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

PROBLEM - SOLVING continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
7. Supply the answer to an oral addition or subtraction problem. (limit: sums of 10, minuends of 10)		*	***								
8. Write number sentences for pictured action. (addition and/or subtraction; limit: sums of 10, minuends of 10)		*	***								
9. Identify the operation (addition or subtraction) to use to solve a simple word problem. (limit: sums of 18, minuends of 18)			*	***							
10. Solve word problems using multiplication with no factor greater than six.			*	***							
11. Solve word problems using addition and subtraction. (sums less than 100, minuends less than 100)			*	***							
12. Solve two-step word problems using addition, subtraction and/or multiplication.				*	**	***					
13. Solve two-step word problems involving amounts of money not exceeding ten dollars.				*	**	***					

MATHEMATICS

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

PROBLEM - SOLVING continued	GRADES										
	Read-iness	1	2	3	4	5	6	7	8	9	10
14. Solve word problems involving time in hours only and in minutes only.				*	**	***					
15. Solve word problems involving time in days, weeks, months or years. (no conversion)				*	**	***					
16. Solve word problems involving weight - units of pounds only or ounces only. (no conversion)				*	***						
17. Compute the average on not more than five numbers, each with a maximum of three-digits.								***			
18. Evaluate a formula for given values: D = rt; I = PRT; C = $2\pi r$; $A = s^2$; $A = \pi r^2$.								*	**	**	***

* Introduced
** Ongoing
*** Mastery

MINIMUM STANDARDS

PROBLEM - SOLVING continued	GRADES										
	Readiness	1	2	3	4	5	6	7	8	9	10
19. Solve consumer related problems in the following categories:											
a. Commission selling											***
b. Planning a trip											***
c. Comparison shopping											***
d. Home ownership											***
e. Budgeting											***
f. Banking and related procedures											***
g. Installment purchases											***
h. Balancing a checkbook											***
20. Solve job related problems in the following categories:											
a. Hourly rate, overtime pay										*	**
b. Income tax, Federal and State										*	**
c. Social Security (FICA)										*	**
d. Workmen's Compensation										*	**

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1. Please describe how you are using this publication: _____

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